2023 DRAFT COASTAL MASTER PLAN

EXPLORATORY ANALYSIS

APPENDIX H

REPORT: VERSION 01
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COASTAL PROTECTION AND
RESTORATION AUTHORITY
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COASTAL PROTECTION AND RESTORATION AUTHORITY

This document was developed in support of the 2023 Coastal Master Plan being prepared by the Coastal Protection and Restoration Authority (CPRA). CPRA was established by the Louisiana Legislature in response to Hurricanes Katrina and Rita through Act 8 of the First Extraordinary Session of 2005. Act 8 of the First Extraordinary Session of 2005 expanded the membership, duties, and responsibilities of CPRA and charged the new authority to develop and implement a comprehensive coastal protection plan, consisting of a master plan (revised every six years) and annual plans. CPRA's mandate is to develop, implement, and enforce a comprehensive coastal protection and restoration master plan.

CITATION

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LIST OF ABBREVIATIONS

CPRA ..... COASTAL PROTECTION AND RESTORATION AUTHORITY

FWOA ..... FUTURE WITHOUT ACTION

FWOCFP ..... FUTURE WITHOUT CURRENTLY FUNDED PROJECTS

HTF ..... HIGH TIDE FLOODING

ICM ..... INTEGRATED COMPARTMENT MODEL

1.0 INTRODUCTION

This report provides an overview of the exploratory analysis conducted for the 2023 Coastal Master Plan using outcomes from the Integrated Compartment Model (ICM) and the storm surge and risk models. This analysis goes beyond forecasting coastal change and selecting projects to deliver storylines that tell a broader picture of how various alternatives, timelines, or specific events may impact the future coast. Four sets of analyses were conducted, and each is briefly described below. This document will continue to be updated as reports are finalized in early 2023.

1.1 FUTURE WITHOUT CURRENTLY FUNDED PROJECTS

This analysis considers what the future of the Louisiana coast would look like if no additional projects were implemented. The future without action (FWOA) condition serves as the baseline from which additional projects are evaluated for inclusion in the master plan. The FWOA condition includes projects that are on the existing landscape as well as projects that are currently under construction or are funded for construction and anticipated to be constructed early in the 50-year model simulation. This includes several large-scale restoration projects including the Mid-Barataria and Mid-Breton sediment diversions. The future without currently funded projects (FWOCFP) condition does not include yet-to-be completed projects or recently completed projects that were not in model input datasets. These projects are listed in Table 1. The FWOCFP analysis illustrates the benefits of these projects over the 50 year planning horizon.

Table 1. Projects included in FWOA condition that are not included in FWOCFP condition

Project ID	Project Name	Project Type
BA-0125	Northwest Turtle Bay Marsh Creation	Marsh Creation
BA-0171	Caminada Headlands Back Barrier Marsh Restoration	Marsh Creation
BA-0197	West Grand Terre Beach Nourishment and Stabilization	Barrier Island Maintenance
BA-0202	Queen Bess Island Restoration	Barrier Island Maintenance
BA-0203	Barataria Basin Ridge and Marsh Creation - Spanish Pass Increment	Marsh Creation
BA-0207	Large-Scale Barataria Marsh Creation	Marsh Creation
BA-0153	Mid Barataria Sediment Diversion	Sediment Diversion

Project ID	Project Name	Project Type
BS-0030	Mid Breton Sediment Diversion	Sediment Diversion
CS-0049	Cameron-Creole Freshwater Introduction	Hydrologic Restoration
CS-0054	Cameron Creole Watershed Grand Bayou Marsh Creation	Marsh Creation
CS-0066	Cameron Meadows Marsh Creation and Terracing	Marsh Creation
CS-0080	Rabbit Island Restoration	Island Restoration
ME-0018, ME-0037	Rockefeller Refuge Gulf Shoreline Stabilization	Shoreline Protection
PO-0029	Mississippi River Reintroduction into Maurepas Swamp	Freshwater Diversion
PO-0075	LaBranche East Marsh Creation	Marsh Creation
PO-0169	New Orleans Landbridge Shoreline Protection and Marsh Creation	Marsh Creation
PO-0174	Biloxi Marsh Living Shoreline	Oyster Barrier Reef
PO-0180	Lake Borgne Marsh Creation - Increment 1	Marsh Creation
TE-0072	Lost Lake Marsh Creation and Hydrologic Restoration	Marsh Creation
TE-0134	West Fourchon Marsh Creation and Nourishment	Marsh Creation
TE-0138	Bayou Decade Ridge Restoration and Marsh Creation	Marsh Creation
TE-0139	Terrebonne Basin Ridge and Marsh Creation - Bayou Terrebonne Increment	Marsh Creation
TE-0143	Terrebonne Basin Barrier Island and Beach Nourishment	Barrier Island Maintenance
TV-0063	Cole's Bayou Marsh Restoration	Marsh Creation

1.2 HIGH TIDE FLOODING MODEL IMPROVEMENTS

The 2023 Coastal Master Plan defines “high tide flooding” (HTF) as a localized coastal flooding event due to meteorological conditions and tides that increase water levels (i.e., not due solely to fluvial, pluvial, or tropical storm surge-based flooding). The High Tide Flooding Model Improvements

(Attachment H2) summarizes alternative methodologies tested for this this analysis.

1.3 HIGH TIDE FLOODING REPORT

A forthcoming High Tide Flooding Report will summarize an analysis of current and future exposure to HTF for communities across coastal Louisiana.

1.4 CASE STUDIES

The case studies component of the exploratory analysis covers a broad range of topics, including the following:

- How do different environmental scenarios alter the outcomes of the ICM and risk models?
- What would the impacts of specific historical storms (i.e., Ike, Rita, Lili, Barry, Ida, and Isaac) be if whose storms occurred on the current or future landscape?
- How would storm surge and risk impacts change when specific projects are implemented on the landscape or as a result of project maintenance? This set of analyses focused on the following geographic areas and projects:
    - Chenier Plain
    - Plaquemines Ridges
    - Lower Barataria Landbridge
    - Barataria Barrier Islands
    - Coastal Forests
    - Interaction of risk reduction and restoration projects
    - Levee maintenance
- How are coastal communities impacted by HTF now, and how will those impacts change over time? This community-based analysis involved predicting HTF events, defining thresholds, and evaluating outcomes relative to specific coastal communities.

1.5 POPULATION PROJECTIONS

This study resulted in population, household income, demographic, and migration pattern projections at the census block group scale for coastal Louisiana for the period of 2020-2070 and was based on historical trends and current estimates.